

Claims

- [c1] 1. A storage media for data, comprising:
a substrate comprising at least one single phase plastic resin portion, wherein the plastic resin portion comprises poly(arylene ether) and a styrene material selected from the group consisting of polystyrene, styrenic copolymer(s), and reaction products and combinations comprising at least one of the foregoing styrene material(s); and
at least one data layer on the substrate;
wherein the data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and
wherein, when the energy field contacts the storage media, the energy field is incident upon the data layer before it could be incident upon the substrate.
- [c2] 2. The storage media as in Claim 1, further comprising surface features selected from the group consisting of servo-patterning, edge features, asperities, and combinations comprising at least one of the foregoing surface features.
- [c3] 3. The storage media of Claim 1, wherein the poly(arylene ether) has a weight average molecular weight of about 5,000 to about 50,000 AMU, and the polystyrene has a weight average molecular weight of about 10,000 to about 300,000 AMU.
- [c4] 4. The storage media of Claim 3, wherein less than or equal to about 20 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.
- [c5] 5. The storage media of Claim 4, wherein less than or equal to about 10 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.
- [c6] 6. The storage media of Claim 5, wherein less than or equal to about 5 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.
- [c7] 7. The storage media of Claim 1, wherein the plastic resin portion further comprises less than or equal to about 90 wt% poly(arylene ether) and less than

or equal to about 90 wt% styrene material, based on the total weight of the plastic resin portion.

[c8] 8.The storage media of Claim 7, wherein the plastic resin portion further comprises about 25 wt% to about 75 wt% poly(arylene ether) and about 25 wt% to about 75 wt% styrene material, based on the total weight of the plastic resin portion.

[c9] 9.The storage media of Claim 8, wherein the plastic resin portion further comprises about 40 wt% to about 60 wt% poly(arylene ether) and about 40 wt% to about 60 wt% styrene material, based on the total weight of the plastic resin portion.

[c10] 10.The storage media of Claim 1, wherein the styrenic copolymer is prepared by bulk, suspension or emulsion polymerization using at least one monovinyl aromatic hydrocarbon selected from the group consisting of alkyl-, cycloalkyl-, aryl-, alkylaryl-, aralkyl-, alkoxy-, aryloxy-, and reaction products and combinations comprising at least one of the foregoing monovinyl aromatic hydrocarbon.

[c11] 11.The storage media as in Claim 10, wherein the hydrocarbon is selected from the group consisting of styrene, 4-methylstyrene, 3,5-diethylstyrene, 4-n-propylstyrene, a-methylstyrene, a-methylvinyltoluene, a-chlorostyrene, a-bromostyrene, dichlorostyrene, dibromostyrene, tetrachlorostyrene, and combinations comprising at least one of the foregoing hydrocarbons.

[c12] 12.The storage media of Claim 1, wherein the styrenic material comprises the styrenic copolymer, and wherein the styrenic copolymer has less than or equal to about 25 mole% co-monomer.

[c13] 13.The storage media of Claim 12, wherein the styrenic copolymer has about 4 mole% to about 15 mole% co-monomer.

[c14] 14.The storage media of Claim 13, wherein the styrenic copolymer has about 6 mole% to about 10 mole% co-monomer.

[c15] 15.The storage media of Claim 12, wherein the co-monomer is selected from

the group consisting of acrylonitrile, maleic anhydride, and reaction products and combinations comprising at least one of the foregoing co-monomers.

[c16] 16.The storage media of Claim 1, further comprising an additive selected from the group consisting of silicates, titanium dioxide glass, zinc oxide, zinc sulfide, carbon black, graphite, calcium carbonate, talc, mica, and reaction products and combinations comprising at least one of the foregoing additives.

[c17] 17.The storage media of Claim 16, wherein the additives are in a form selected from the group consisting of continuous fibers, chopped fibers, flakes, nanotubes, spheres, particles, and combinations comprising at least one of the foregoing forms.

[c18] 18.The storage media of Claim 1, further comprising an additive selected from the group consisting of mold release agent(s), UV absorber(s), light stabilizer(s), thermal stabilizer(s), lubricant(s), plasticizer(s), dye(s), colorant(s), anti-static agent(s), anti-drip agent(s), and reaction products and combinations comprising at least one of the foregoing additives.

[c19] 19.The storage media of Claim 1, wherein the styrenic material further comprises about 25 wt% to about 90 wt% polystyrene and about 10 wt% to about 75 wt% styrenic copolymers, based upon the total weight of the styrenic material.

[c20] 20.The storage media of Claim 19, wherein the styrenic material further comprises and about 50 wt% to about 90wt% polystyrene and about 10 wt% to about 50 wt% styrenic copolymers, based upon the total weight of the styrenic material.

[c21] 21.The storage media of Claim 1, wherein the poly(arylene ether) has an intrinsic viscosity of about 0.10 to about 0.60 dl/g measured in chloroform at 25 °C.

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[c22] 22.A storage media for data, the media comprising:
a substrate comprising at least one single phase plastic resin portion, wherein the plastic resin portion comprises the reaction product of poly(arylene ether)

and a styrene material selected from the group consisting of polystyrene, styrenic copolymer(s), and reaction products and combinations comprising at least one of the foregoing styrene material(s); and at least one data layer on the substrate; wherein the data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein, when the energy field contacts the storage media, the energy field is incident upon the data layer before it could be incident upon the substrate.

[c23] 23.The storage media of Claim 22, wherein less than or equal to about 20 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.

[c24] 24.The storage media of Claim 23, wherein less than or equal to about 10 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.

[c25] 25.The storage media of Claim 24, wherein less than or equal to about 5 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.

[c26] 26.The storage media of Claim 22, wherein the styrenic copolymer has less than or equal to about 25 mole% co-monomer.

[c27] 27.The storage media of Claim 26, wherein the styrenic copolymer has about 4 mole% to about 15 mole% co-monomer.

[c28] 28.The storage media of Claim 27, wherein the styrenic copolymer has about 6 mole% to about 10 mole% co-monomer.

[c29] 29.The storage media of Claim 22, wherein the poly(arylene ether) has an intrinsic viscosity of about 0.10 to about 0.60 dl/g measured in chloroform at 25 ° C.

[c30] 30.A method for retrieving data, comprising:
rotating a storage media having a substrate comprising at least one single phase plastic resin portion and at least one data layer disposed on at least one

surface of the substrate, wherein the plastic resin portion comprises the reaction product of poly(arylene ether) and a styrene material selected from the group consisting of polystyrene, styrenic copolymer(s), and reaction products and combinations comprising at least one of the foregoing styrene material(s); directing an energy field at the storage media such that the energy field is incident upon the data layer before it can be incident upon the substrate; and retrieving information from the data layer via the energy field.

[c31] 31. The method for retrieving data as in Claim 30, further comprising passing at least a portion of the energy field to the data layer, and passing at least a part of the portion of the energy field back from the data layer.

[c32] 32. The method for retrieving data as in Claim 30, wherein the energy field is incident upon the data storage layer without being incident upon the substrate.

[c33] 33. The method for retrieving data as in Claim 30, wherein less than or equal to about 10 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.

[c34] 34. The method for retrieving data as in Claim 33, wherein less than or equal to about 5 wt% of the poly(arylene ether) has a weight average molecular weight of less than or equal to about 15,000 AMU.

[c35] 35. The method for retrieving data as in Claim 30, wherein the styrenic copolymer has about 4 mole% to about 15 mole% co-monomer.

[c36] 36. The method for retrieving data as in Claim 35, wherein the styrenic copolymer has about 6 mole% to about 10 mole% co-monomer.

[c37] 37. The method for retrieving data as in Claim 30, wherein the poly(arylene ether) has an intrinsic viscosity of about 0.10 to about 0.60 dl/g measured in chloroform at 25 ° C.

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